

# Capture the Gene

# Competent Cells

- High efficiency cloning and expression
- Convenient single-use 50µl formats for one-time use
- Strains comparable to DH5 $\alpha$ <sup>™</sup> and DH10B<sup>™</sup>
- Chemically Competent and ElectroCompetent cells

## Cloning

Bioline offers a wide range of chemically competent and electrocompetent cells for cloning (see below). They typically offer blue/white screening, are efficiently transformed and provide *recA1* and *endA1* markers to minimize recombination and enhance the quality of plasmid DNA. In general, lower efficiency competent cells are suitable for most purposes such as transforming purified plasmid DNA, whereas high efficiency competent cells are suitable for more difficult cloning and library construction.

Product	Transformation Efficiency	Application
dam-/dcm-	1 x 10 <sup>7</sup>	Production of plasmid devoid of dam and dcm methylation
$\alpha$ -Select Bronze	1 x 10 <sup>7</sup>	Economical choice for routine subcloning
$\alpha$ -Select Silver	1 x 10 <sup>8</sup>	Ideal for difficult clone construction/blunt end ligations
$\alpha$ -Select Gold	1 x 10 <sup>9</sup>	For high efficiency, library construction and cloning with limited amounts of DNA
BIOBlue	1 x 10 <sup>9</sup>	Best quality plasmid DNA and cloning single stranded phage DNA
CH3-Blue	1 x 10 <sup>9</sup>	For methylated DNA and cDNA libraries
$\alpha$ -Select Electrocompetent	5 x 10 <sup>9</sup>	Electroporation for cDNA or genomic library construction
ElectroSHOX	1 x 10 <sup>10</sup>	Highest efficiency electroporation for libraries or cloning with limited amounts of DNA

## Protein Expression

BL21 Competent Cells are an all purpose strain used for protein expression from vectors containing *E. coli* promoters such as *trc*, *tac*,  $\lambda$ PL and *araD*. Non-T7 promoter expression BL21 cells are used for high-level expression of proteins from vectors utilizing *E. coli* promoters, whereas T7 RNA Polymerase expression in BL21 (DE3) cells allows IPTG induction of the protein to be expressed. When expressing a protein that may be very toxic to the cells the tighter promoter control of the BL21 (DE3) pLysS and BL21 (DE3) pLysE strains is recommended.

Product	Transformation Efficiency	Application
BL21	1 x 10 <sup>7</sup>	High-level expression of a variety of recombinant proteins
BL21 (DE3)	1 x 10 <sup>7</sup>	High-level protein expression and easy induction
BL21 (DE3) pLysS	1 x 10 <sup>7</sup>	Tighter control of protein expression for expression of toxic proteins
BL21 (DE3) pLysE	1 x 10 <sup>7</sup>	Produces higher amounts of T7 lysozyme to give tightest control of protein expression for expression of very toxic proteins.

Bioline USA Inc.

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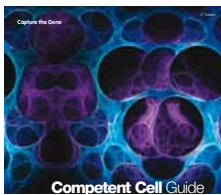


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# Competent Cells

Cloning										
Strain	Efficiency cfu/μg pUC19	Competency: Chemical C Electrocomp E	Blue white screening ( <i>lacZ</i> )	Recombination deficient ( <i>recA</i> )	Endonuclease deficient ( <i>endA</i> )	Restriction deficient ( <i>hsdR<sub>K</sub></i> )	Methyl restriction deficient ( <i>mcrA, mcrB, mrr</i> )	Single-strand ability (F' episome)	Phage resistance ( <i>phuA, tonA orT1R</i> )	Unmethylated DNA ( <i>dam dcm</i> )
α-Select Gold Efficiency	≥1 x 10 <sup>9</sup>	C	✓	✓	✓	✓				
α-Select Silver Efficiency	≥1 x 10 <sup>8</sup>	C	✓	✓	✓	✓				
α-Select Bronze Efficiency	≥1 x 10 <sup>7</sup>	C	✓	✓	✓	✓				
α-Select Electrocompetent	≥5 x 10 <sup>9</sup>	E	✓	✓	✓	✓				
α-Select Gold Efficiency T1-Res	≥1 x 10 <sup>9</sup>	C	✓	✓	✓	✓			✓	
α-Select Silver Efficiency T1-Res	≥1 x 10 <sup>8</sup>	C	✓	✓	✓	✓			✓	
CH3-Blue 10 <sup>9</sup> Chemically competent	≥1 x 10 <sup>9</sup>	C	✓	✓	✓		✓			
ElectroSHOX Chemically competent	≥1 x 10 <sup>10</sup>	E	✓	✓	✓		✓			
BIOBlue 10 <sup>9</sup> Chemically competent	≥1 x 10 <sup>9</sup>	C	✓	✓	✓	✓		✓		
dam-/dcm- Chemically competent	≥1 x 10 <sup>7</sup>	C				✓	✓		✓	✓

Protein Expression									
Strain	Efficiency cfu/μg pUC19	Competency: Chemical C Electrocomp E	Strain background	Restriction deficient ( <i>hsdS<sub>B</sub></i> )	Protease deficient ( <i>ompT</i> )	T7 RNA polymerase	Deficient in cytosine metabolism ( <i>dcm</i> )	Deficient in galactose metabolism ( <i>gal</i> )	Ideal applications
BL21	≥1 x 10 <sup>7</sup>	C	B	✓	✓		✓	✓	Non T7 promoter expression
BL21 (DE3)	≥1 x 10 <sup>7</sup>	C	B	✓	✓	✓	✓	✓	T7 promoter expression
BL21 (DE3) PlysS	≥1 x 10 <sup>7</sup>	C	B	✓	✓	✓	✓	✓	Regulation of T7 promoter expression
BL21 (DE3) PlysE	≥1 x 10 <sup>7</sup>	C	B	✓	✓	✓	✓	✓	Regulation of T7 promoter expression



The 24 page Competent Cell guide is now available for download online:  
[www.bioline.com/guides](http://www.bioline.com/guides)

## Ordering Information

PRODUCT	Efficiency cfu/μg	PACK SIZE	CAT NO.	PRICE
α-Select Bronze Efficiency	≥1 x 10 <sup>7</sup>	2ml (10 x 200μl)	BIO-85025	\$65.00
α-Select Silver Efficiency	≥1 x 10 <sup>8</sup>	2ml (10 x 200μl)	BIO-85026	\$110.00
α-Select Gold Efficiency*	≥1 x 10 <sup>9</sup>	1ml (20 x 50μl)	BIO-85027	\$145.00
α-Select Silver Efficiency T1-Res	≥1 x 10 <sup>8</sup>	2ml (10 x 200μl)	BIO-85029	\$145.00
α-Select Gold Efficiency T1-Res	≥1 x 10 <sup>9</sup>	1ml (20 x 50μl)	BIO-85030	\$175.00
<i>dam-I dcm-</i> T1-Res	≥1 x 10 <sup>7</sup>	1ml (10 x 100μl)	BIO-85044	\$155.00
CH3-Blue	≥1 x 10 <sup>9</sup>	1ml (20 x 50μl)	BIO-85040	\$185.00
BioBlue	≥1 x 10 <sup>9</sup>	1ml (20 x 50μl)	BIO-85037	\$145.00
ElectroSHOX	≥1 x 10 <sup>10</sup>	1ml (10 x 100μl)	BIO-85038	\$220.00
α-Select Electrocompetent Cells	≥5 x 10 <sup>9</sup>	1ml (10 x 100μl)	BIO-85028	\$165.00
BL21	≥1 x 10 <sup>7</sup>	1ml (10 x 100μl)	BIO-85031	\$110.00
BL21 (DE3)	≥1 x 10 <sup>7</sup>	1ml (10 x 100μl)	BIO-85032	\$110.00
BL21 (DE3) pLysS	≥1 x 10 <sup>7</sup>	1ml (10 x 100μl)	BIO-85033	\$110.00
BL21 (DE3) pLysE	≥1 x 10 <sup>7</sup>	1ml (10 x 100μl)	BIO-85034	\$110.00
BL21 Combo Pack	≥1 x 10 <sup>7</sup>	1.5ml (15 x 100μl)	BIO-85035	\$145.00

\*Single use aliquots

Note: DH5α™ and DH10B™ are trademarks of Invitrogen

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